US006675706B2

(12) **United States Patent**
Barker et al.

(10) **Patent No.: US 6,675,706 B2**
(45) **Date of Patent: Jan. 13, 2004**

(54) **DAMPENING ASSEMBLY HAVING AIR SEAL APPARATUS FOR SEALING DAMPENING SOLUTION**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/766,460**

(22) Filed: **Jan. 19, 2001**

(65) **Prior Publication Data**

US 2002/0096065 A1 Jul. 25, 2002

(51) **Int. Cl.**[7] **B41L 25/00**; B41F 7/24
(52) **U.S. Cl.** **101/148**; 101/147; 101/363
(58) **Field of Search** 101/147, 148, 101/363, 364, 204, 207, 208, 210, 340, 347, 350.1, 355, 356

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(57) **ABSTRACT**

A seal apparatus is disclosed for sealing dampening solution which is disposed within a reservoir extending from a nip defined between a form roller and a metering roller of a lithographic printing machine. The apparatus includes a source of pressurized air and device for directing a flow of air from the source of pressurized air towards an edge of the reservoir and between the form and metering rollers such that the flow of air generates an air dam for sealing the reservoir so that leakage of the dampening solution from the edge of the reservoir is inhibited.

17 Claims, 6 Drawing Sheets

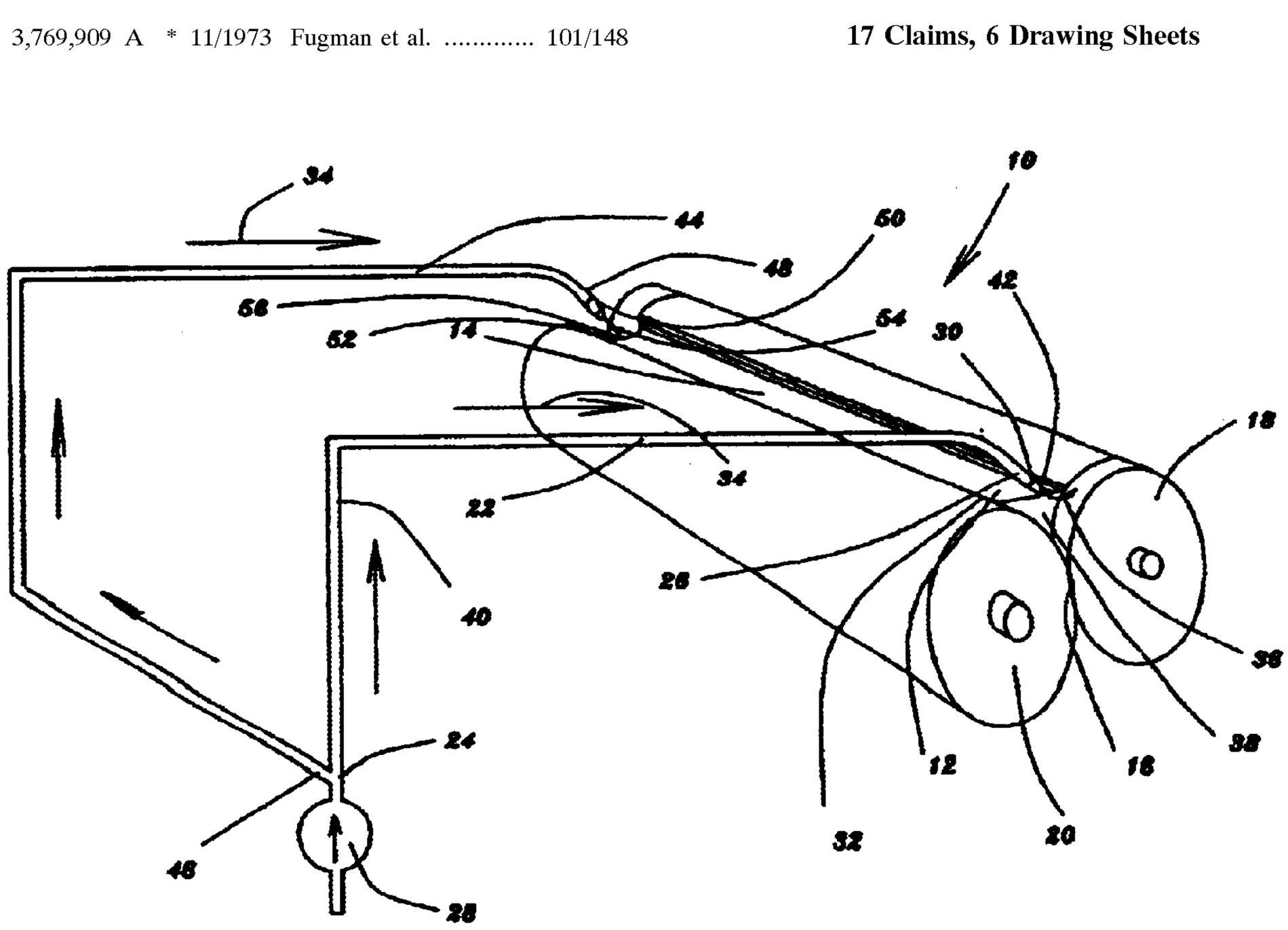

Fig. 1.

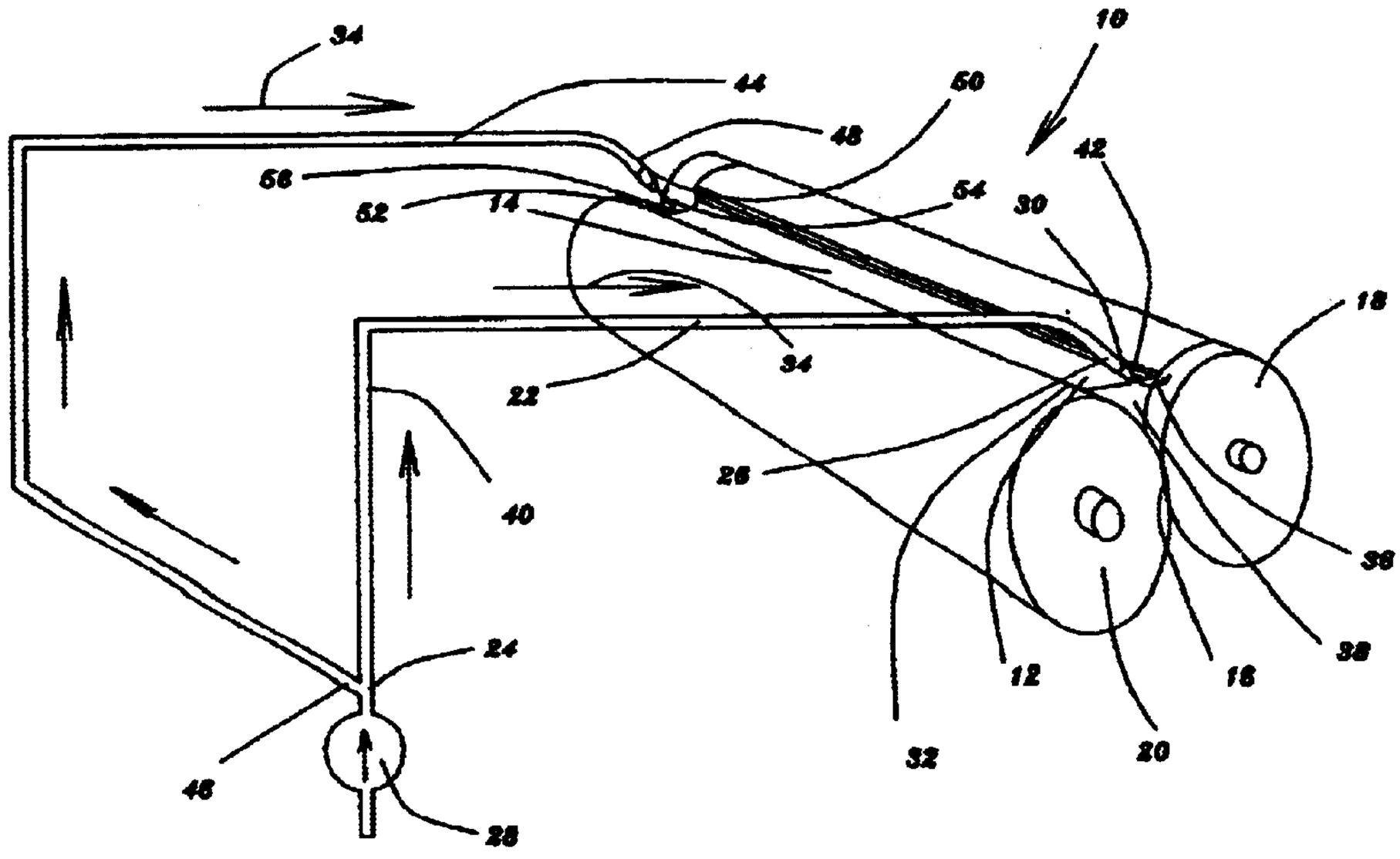
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Fig. 2.

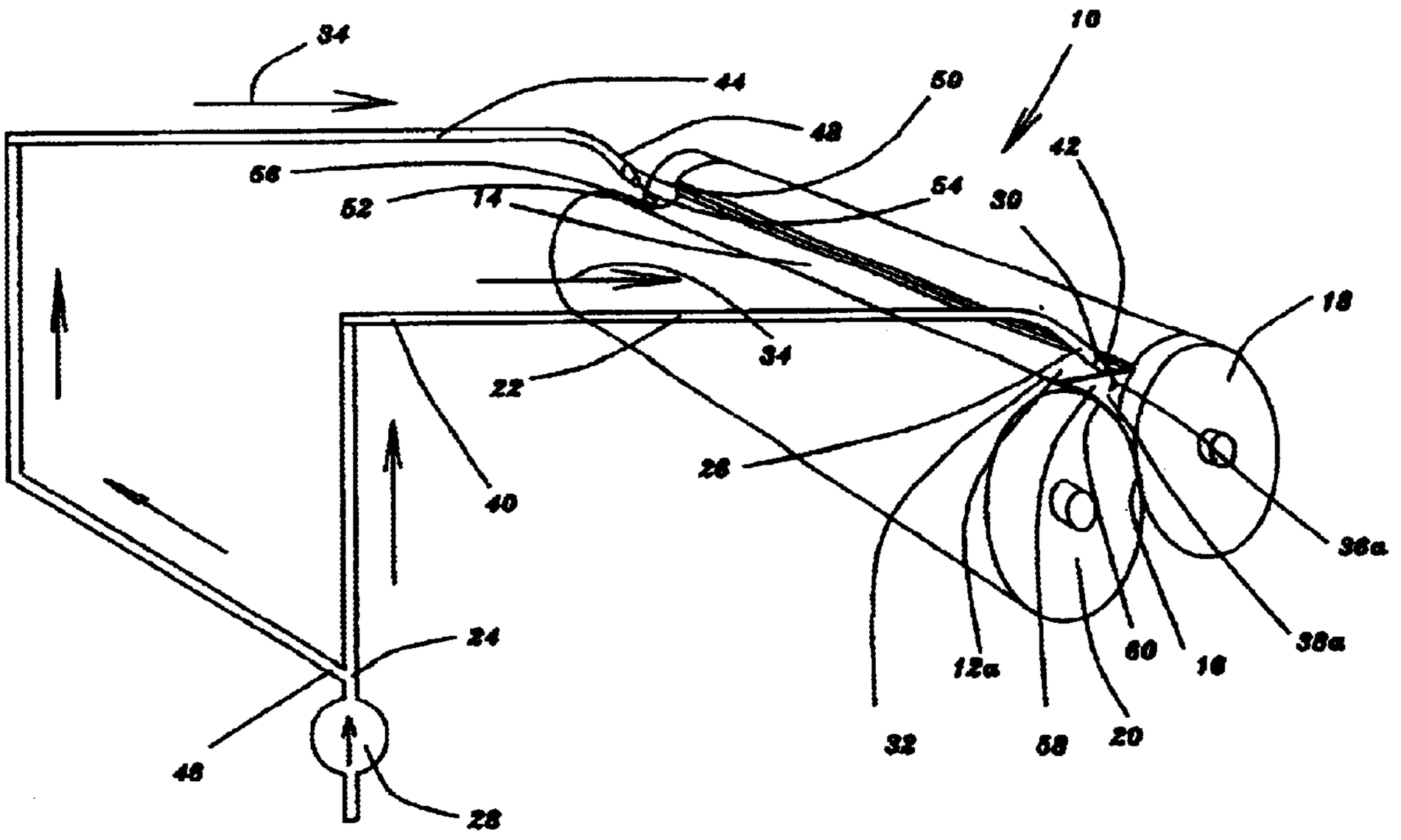
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Fig. 3.

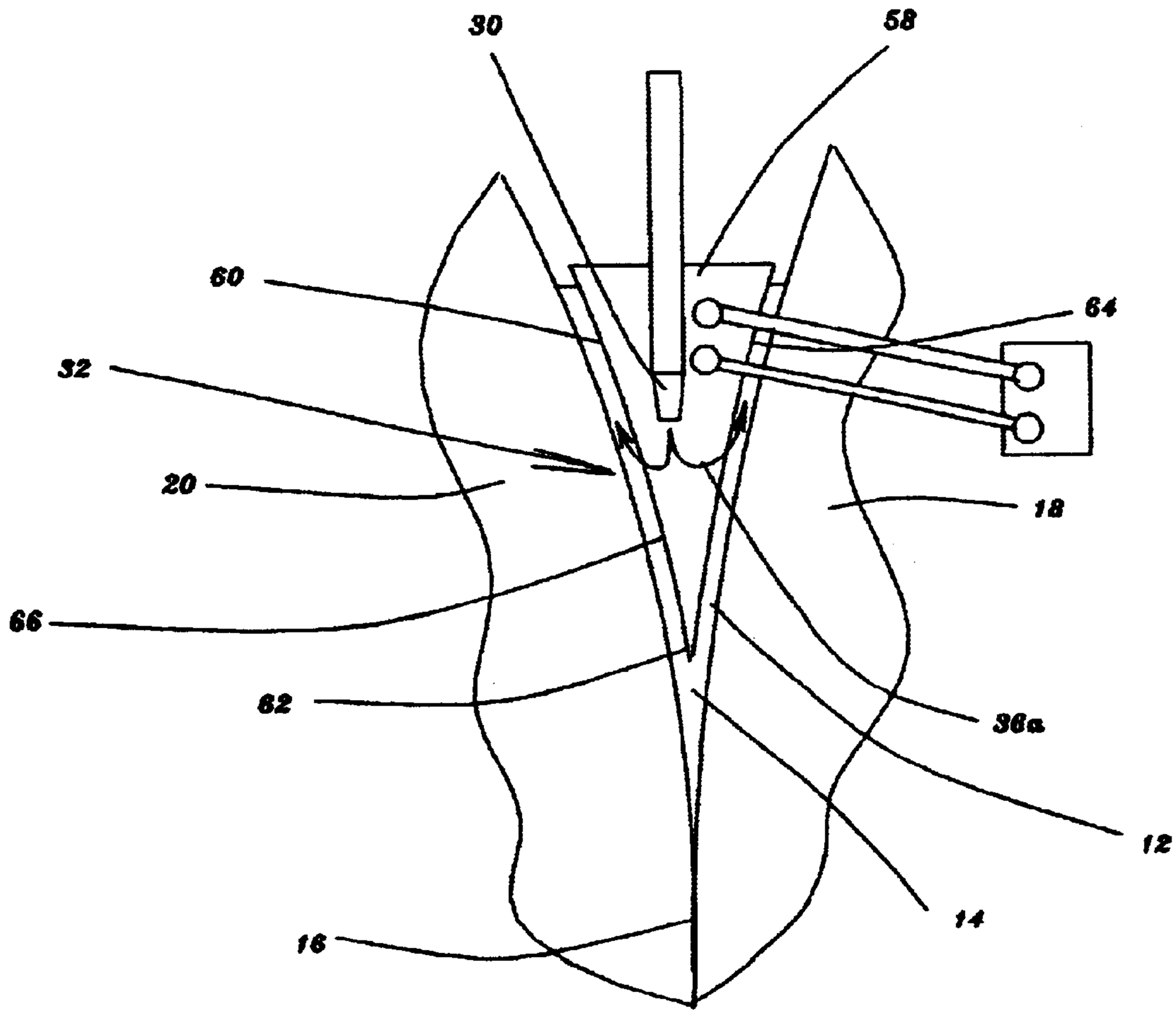


Fig. 4.

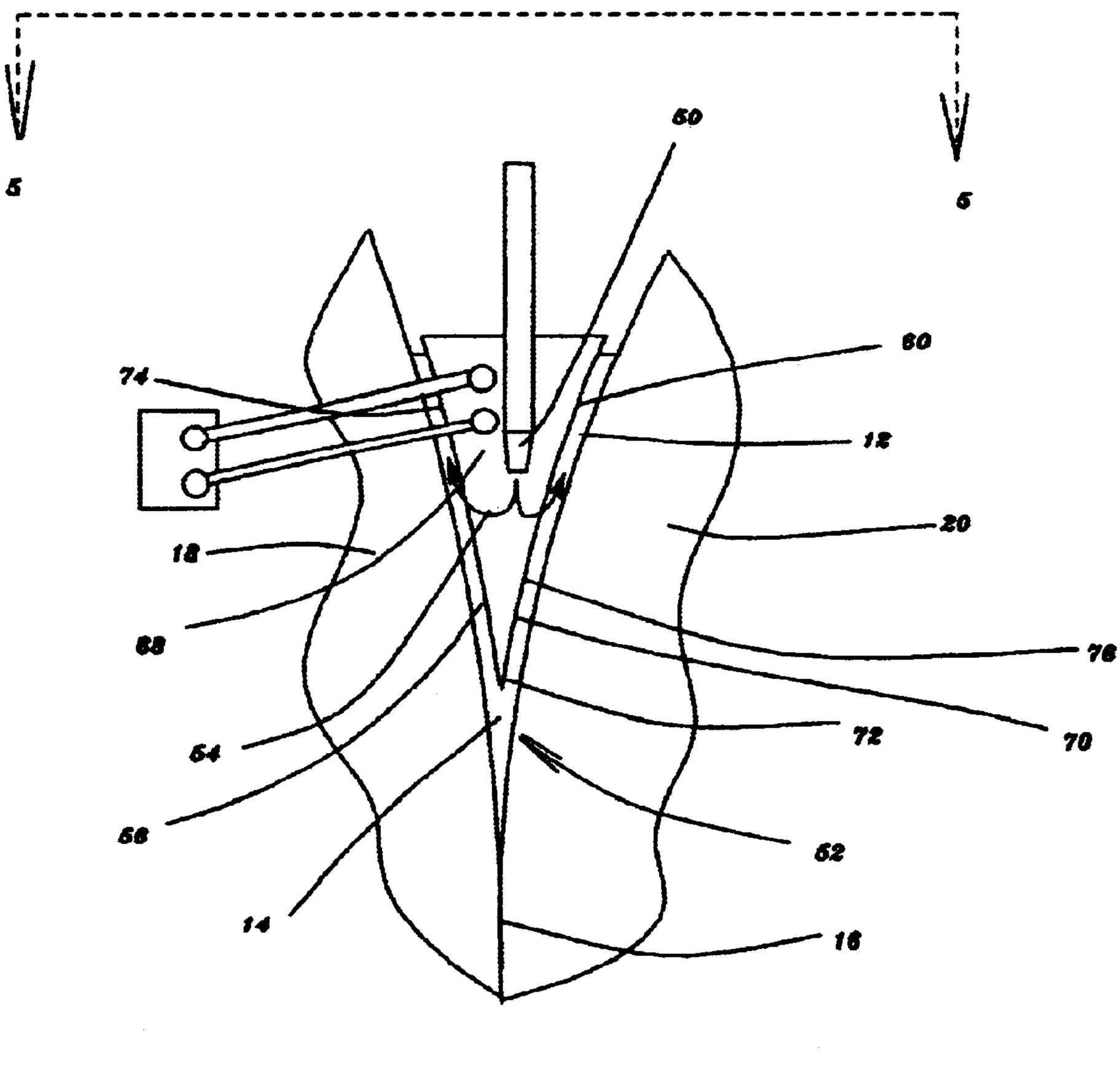
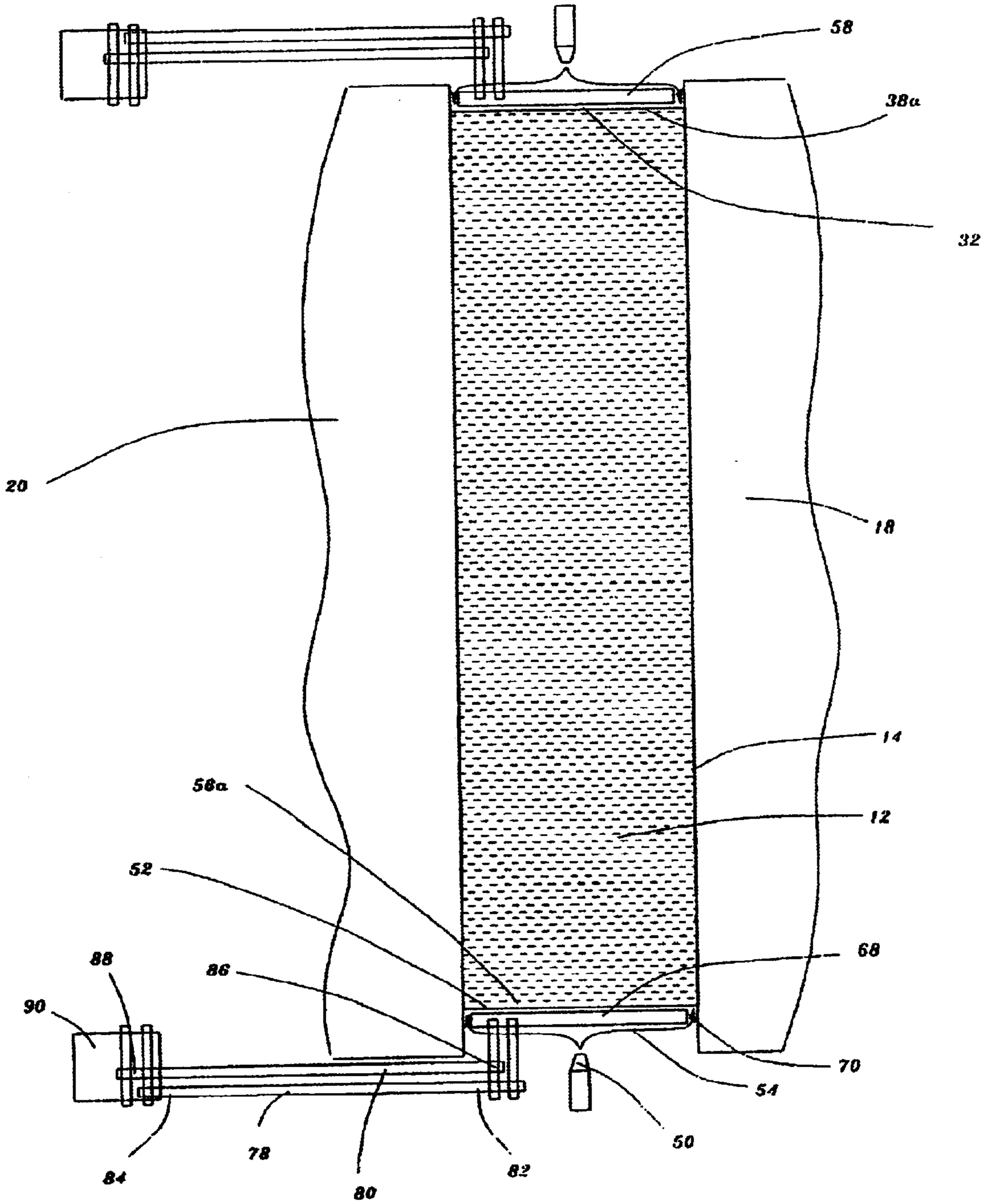


Fig. 5.



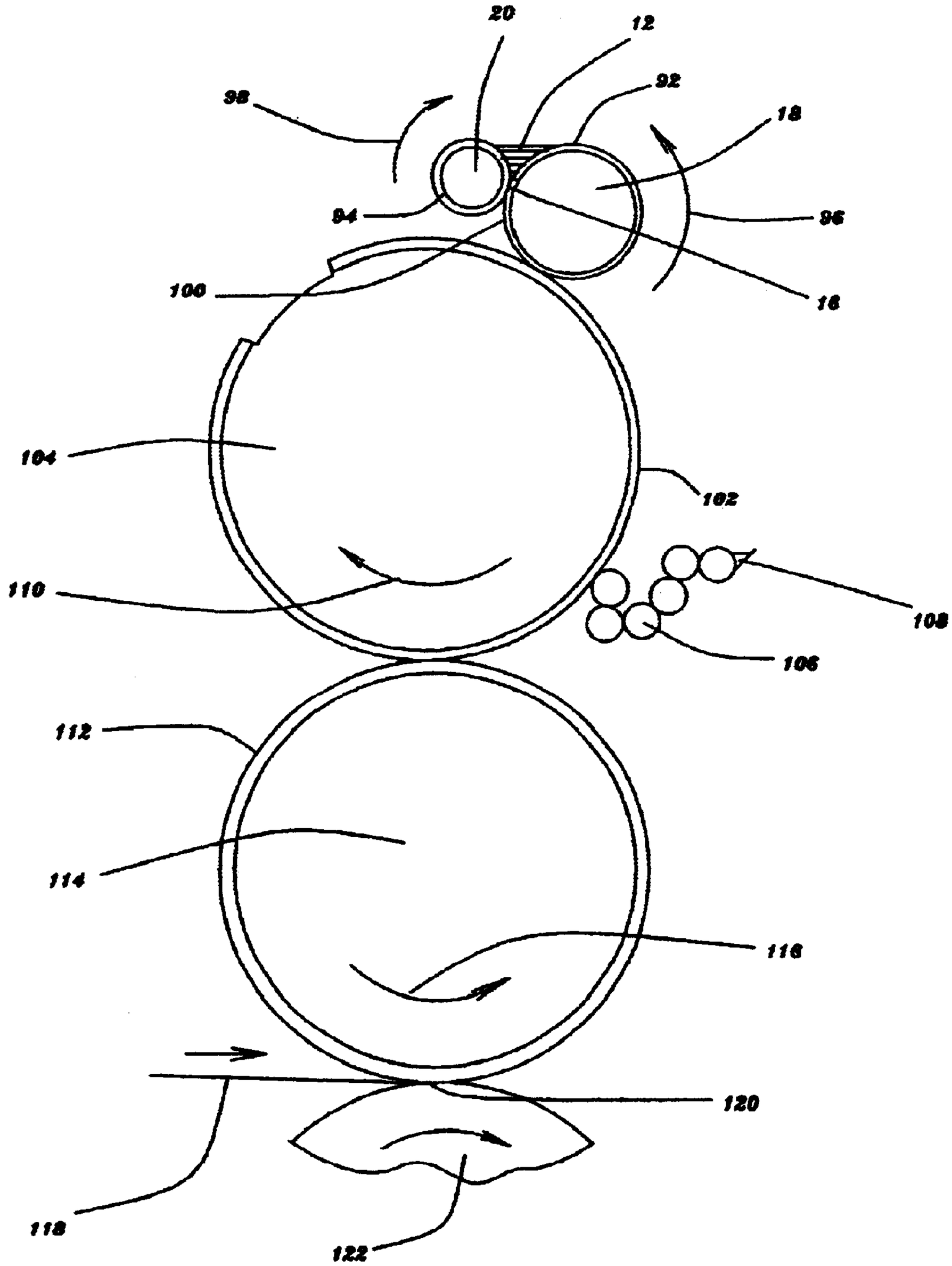

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Fig. 6.

DAMPENING ASSEMBLY HAVING AIR SEAL APPARATUS FOR SEALING DAMPENING SOLUTION

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a seal apparatus for sealing dampening solution. More specifically, the present invention relates to a seal apparatus for sealing dampening solution which is disposed within a reservoir extending from a nip defined between a form roller and a metering roller of a lithographic printing machine.

2. Information Disclosure Statement

In the lithographic printing art, a form roller and a metering roller are positioned such that the form roller is urged against the metering roller to form a nip therebetween. The form roller includes a cover which may be of rubber. The metering roller also has a cover. The wedge shaped space above the form and metering rollers is filled with dampening solution by means of a constant level filling arrangement. As the form and metering rollers rotate, dampening solution is metered by the nip and is transferred from the surface of the cover of the form roller to a lithographic printing plate secured around the periphery of a rotating plate cylinder. Subsequent to the application of dampening solution to the printing plate, ink is applied to the dampened surface of the printing plate by means of a train of inking rollers which cooperate with an ink fountain. Consequently, due to the prior treatment of the plate, certain portions of the surface of the printing plate will be receptive to the transfer thereto of damping solution and subsequently to the reception of ink. However, other portions of the surface of the plate will be non receptive to such dampening solution and will not therefore take up any dampening solution or any ink. Such hydrophobic portions of the surface of the plate will therefore be devoid of ink. Furthermore, the hydrophilic portions of the surface of the printing plate will be receptive first to the dampening solution and then to the printing ink. Due to the rotation of the plate cylinder, the ink image formed on the plate will be transferred to the surface of a blanket secured to the periphery of a rotating blanket cylinder. As the blanket cylinder rotates, the ink image on the surface of the blanket is transferred to a web of paper extending through a nip defined between the blanket cylinder and a backing roller.

As the form and metering rollers are rotating, dampening solution is transferred by the form roller and is applied to the printing plate secured to the plate cylinder. However, during continued rotation of the form roller in contact with the printing plate, ink particles subsequently applied to the dampened plate will be taken up by the form roller from the printing plate. Such ink particles will mix with the dampening solution. Consequently, during prolonged usage of the printing machine, if such mixture of ink and dampening solution were to leak past the edges of the reservoir, such leakage could spoil an image subsequently transferred to the paper web.

The present invention relates to the provision of air dam seals disposed at the edges of the reservoir for preventing leakage of dampening solution and ink particles.

Therefore, it is a primary feature of the present invention, to provide air dam seals disposed at the edges of a reservoir that overcomes the problems associated with the prior art devices and which make a considerable contribution to the art of lithographic printing.

Another feature of the present invention is the provision of air dam seals which prevent leakage past the edges of a reservoir.

A further feature of the present invention is the provision of air dam seals which permits prolonged usage of the printing setup without marring the quality of the printed product.

Other features and advantages of the present invention will be readily apparent to those skilled in the art by a consideration of the detailed description contained herein with reference to the annexed drawings which show a preferred embodiment of the present invention.

SUMMARY OF THE INVENTION

The present invention relates to a seal apparatus for sealing dampening solution which is disposed within a reservoir extending from a nip defined between a form roller and a metering roller of a lithographic printing machine. The apparatus includes a conduit having a first and a second end, the first end being connected to a source of pressurized air. A nozzle is sealingly connected to the second end of the conduit, the nozzle being located adjacent to an edge of the reservoir. The arrangement is structured such that in use of the apparatus, pressurized air flows from the source of pressurized air through the conduit to the nozzle so that the nozzle directs a flow of air towards the edge of the reservoir and between the form and metering rollers such that the flow of air generates an air dam for sealing the reservoir so that leakage of the dampening solution from the edge of the reservoir is inhibited.

In a more specific embodiment of the present invention, the conduit includes a plastic tube and the plastic tube is flexible.

Also, the nozzle defines a throat which increases the velocity of the flow of air so that the flow of air reliably and predictably impedes leakage of the dampening solution from the edge of the reservoir.

The apparatus further includes a further conduit having a first and a second extremity, the first extremity being connected to the source of pressurized air. A further nozzle is sealingly connected to the second extremity of the further conduit, the further nozzle being located adjacent to a further edge of the reservoir. The further edge of the reservoir is disposed between the form and metering rollers and is spaced axially along the rollers relative to the edge. The arrangement is structured such that in use of the apparatus, pressurized air flows from the source of pressurized air through the conduit to the nozzle so that the nozzle directs a flow of air towards the edge of the reservoir and between the form and metering rollers such that the flow of air generates an air dam for sealing the reservoir so that leakage of the dampening solution from the edge of the reservoir is inhibited.

Additionally, the arrangement is such that pressurized air also flows from the source of pressurized air through the further conduit to the further nozzle so that the further nozzle directs a further flow of air towards the further edge of the reservoir and between the form and metering rollers such that the further flow of air generates a further air dam for sealing the reservoir so that leakage of the dampening solution from the further edge of the reservoir is inhibited.

In another embodiment of the present invention, a wedge shaped seal is disposed between the nozzle and the edge of the reservoir for assisting in the generation of the air dam, the wedge shaped seal diverting the flow of air so that the flow of air flows towards a periphery defined by the wedge

shaped seal so that leakage of dampening solution from the reservoir past the periphery of the wedge shaped seal is prevented.

Furthermore, the wedge shaped seal is of cusp shaped configuration, the wedge shaped seal having a point and a first and a second curved surface. The arrangement is such that the point is disposed closely adjacent to the nip defined between the form and metering rollers, the first curved surface being disposed in spaced close proximity to the form roller and the second curved surface is disposed in spaced close proximity to the metering roller.

More specifically, in a preferred embodiment, the wedge shaped seal is fabricated from a plastics material and is adjustably disposed relative to the edge of the reservoir.

Moreover, the wedge shaped seal is disposed spaced from the form and metering rollers so that friction and wear between the wedge shaped seal and adjacent rollers is inhibited.

The wedge shaped seal is disposed between the nozzle and the edge of the reservoir for assisting in the generation of the air dam, the wedge shaped seal diverting the flow of air so that the flow of air flows towards a periphery defined by the wedge shaped seal so that leakage of the dampening solution from the reservoir past the periphery of the wedge shaped seal is prevented. Also, a further wedge shaped seal is disposed between the further nozzle and the further edge of the reservoir for assisting in the generation of the further air dam. The further wedge shaped seal diverts the further flow of air so that the further flow of air flows towards a further periphery defined by the further wedge shaped seal so that leakage of the dampening solution from the reservoir past the further periphery of the further wedge shaped seal is prevented.

The further wedge shaped seal is of cusp shaped configuration, the further wedge shaped seal having a further point and a further first and a second curved surface. The arrangement is such that the further point is disposed closely adjacent to the nip defined between the form and metering rollers. The further first curved surface is disposed in spaced close proximity to the form roller while the further second curved surface is disposed in spaced close proximity to the metering roller.

In a preferred embodiment of the present invention, the further wedge shaped seal is fabricated from a plastics material and is adjustably disposed relative to the further edge of the reservoir.

Also, the further wedge shaped seal is disposed spaced from the form and metering rollers so that friction and wear between the further wedge shaped seal and the adjacent rollers is inhibited.

Many modifications and variations of the present invention will be readily apparent to those skilled in the art by a consideration of the detailed description contained hereinafter. However, such modifications and variations fall within the spirit and scope of the present invention as defined by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a seal apparatus according to the present invention;

FIG. **2** is a similar view to that shown in FIG. **1** but shows a further embodiment of the present invention;

FIG. **3** is an enlarged side elevational view of a wedge shaped seal shown in FIG. **2**;

FIG. **4** is a similar view to that shown in FIG. **3** but viewed from the opposite side of the reservoir;

FIG. **5** is a sectional view taken on the line **5**—**5** of FIG. **4**; and

FIG. **6** is a side elevational view of a typical lithographic printing machine incorporating the the air dam seal arrangement according to the present invention.

Similar reference characters refer to similar parts throughout the various views of the drawings.

DETAILED DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a seal apparatus generally designated **10** according to the present invention. As shown in FIG. **1**, the seal apparatus **10** is used for sealing dampening solution **12** which is disposed within a reservoir **14** extending from a nip **16** defined between a form roller **18** and a metering roller **20** of a lithographic printing machine. The seal apparatus **10** includes a conduit **22** having a first and a second end **24** and **26** respectively, the first end **24** being connected to a source of pressurized air **28**. Means such as a nozzle **30** is sealingly connected to the second end **26** of the conduit **22**, the nozzle **30** being located adjacent to an edge **32** of the reservoir **14**. The arrangement is structured such that in use of the apparatus **10**, pressurized air flows as indicated by the arrow **34** from the source of pressurized air **28** through the conduit **22** to the nozzle **30** so that the nozzle **30** directs a flow of air as indicated by the arrow **36** towards the edge **32** of the reservoir **14** and between the form and metering rollers **18** and **20** respectively such that the flow of air **36** generates an air dam **38** for sealing the reservoir **14** so that leakage of the dampening solution **12** from the edge **32** of the reservoir **14** is inhibited.

In a more specific embodiment of the present invention, the conduit **22** includes a plastic tube **40** and the plastic tube **40** is flexible.

Also, the nozzle **30** defines a throat **42** which increases the velocity of the flow of air **36** so that the flow of air **36** reliably and predictably impedes the leakage of the dampening solution **12** sideways from the edge **32** of the reservoir **14**.

The apparatus **10** further includes a further conduit **44** having a first and a second extremity, **46** and **48** respectively, the first extremity **46** being connected to the source of pressurized air **28**. A further nozzle **50** is sealingly connected to the second extremity **48** of the further conduit **44**, the further nozzle **50** being located adjacent to a further edge **52** of the reservoir **14**. The further edge **52** is disposed between the form and metering rollers **18** and **20** respectively and spaced axially along the rollers **18** and **20** relative to the edge **32**.

Additionally, the arrangement is such that pressurized air **34** also flows from the source of pressurized air **28** through the further conduit **44** to the further nozzle **50** so that the further nozzle **50** directs a further flow of air **54** towards the further edge **52** of the reservoir **14** and between the form and metering rollers **18** and **20** respectively such that the further flow of air **54** generates a further air dam **56** for sealing the reservoir **14** so that leakage of the dampening solution **12** from the further edge **52** of the reservoir **14** is inhibited.

FIG. **2** is a similar view to that shown in FIG. **1** but shows a further embodiment of the present invention. A wedge shaped seal **58** is disposed between the nozzle **30** and the edge **32** of the reservoir **14** for assisting in the generation of an air dam **38***a*, the wedge shaped seal **58** diverting the flow of air **36***a* so that the flow of air **36***a* flows towards a periphery **60** defined by the wedge shaped seal **58** so that leakage of the dampening solution **12***a* from the reservoir **14** past the periphery **60** of the wedge shaped seal **58** is prevented.

FIG. **3** is an enlarged view of the wedge shaped seal **58** shown in FIG. **2**. As shown in FIG. **3**, the wedge shaped seal **58** is of cusp shaped configuration, the wedge shaped seal **58** having a point **62** and a first and a second curved surface **64** and **66** respectively. The arrangement is such that the point **62** is disposed closely adjacent to the nip **16** defined between the form and metering rollers **18** and **20** respectively, the first curved surface **64** being disposed in spaced close proximity to the form roller **18** and the second curved surface **66** being disposed in spaced close proximity to the metering roller **20**.

More specifically, the wedge shaped seal **58** is fabricated from a plastics material and is adjustably disposed relative to the edge **32** of the reservoir **14**.

Moreover, the wedge shaped seal **58** is disposed spaced from the form and metering rollers **18** and **20** respectively so that friction and wear between the wedge shaped seal **58** and the adjacent rollers **18** and **20** is inhibited.

The wedge shaped seal **58** is disposed between the nozzle **30** and the edge **32** of the reservoir **14** for assisting in the generation of the air dam **38***a*, the wedge shaped seal **58** diverting the flow of air **36***a* so that the flow of air **36***a* flows towards the periphery **60** defined by the wedge shaped seal **58** so that leakage of the dampening solution **12** from the reservoir **14** past the periphery **60** of the wedge shaped seal **58** is prevented. The periphery **60** is also shown in FIG. **4**.

FIG. **4** is a similar view to that shown in FIG. **3** but shows the opposite edge **52** of the reservoir **14**. As shown in FIG. **4**, a further wedge shaped seal **68** is disposed between the further nozzle **50** and the further edge **52** of the reservoir **14** for assisting in the generation of the further air dam **56**. The further wedge shaped seal **68** diverts the further flow of air **54** so that the further flow of air **54** flows towards a further periphery **70** defined by the further wedge shaped seal **68** so that leakage of the dampening solution **12** from the reservoir **14** past the further periphery **70** of the further wedge shaped seal **68** is prevented.

The further wedge shaped seal **68** is also of cusp shaped configuration, the further wedge shaped seal **68** having a further point **72** and a further first and a second curved surface **74** and **76** respectively. The arrangement is such that the further point **72** is disposed closely adjacent to the nip **16** defined between the form and metering rollers **18** and **20** respectively, the further first curved surface **74** being disposed in spaced close proximity to the form roller **18** and the further second curved surface **76** being disposed in spaced close proximity to the metering roller **20**.

In a preferred embodiment of the present invention, the further wedge shaped seal **68** is also fabricated from a plastics material and is adjustably disposed relative to the further edge **52** of the reservoir **14**.

FIG. **5** is a sectional view taken on the line **5**—**5** of FIG. **4**. As shown in FIG. **5**, the dampening solution **12** is disposed within the reservoir **14** and the further nozzle **50** causes the further flow of air **54** to flow around the further periphery **70** of the further wedge shaped seal **68** to enhance the generation of the further air dam seal **56***a*.

As further shown in FIG. **5**, the seal **68** is supported by a first and second arm **78** and **80** respectively which are disposed parallel relative to each other. The first arm **78** has a first and a second end **82** and **84** respectively and the second arm **80** has a first and second extremity **86** and **88** respectively. The first end and first extremity **82** and **86** respectively of the arms **78** and **80** are pivotally secured to the seal **68**. Also, the second end and second extremity **84** and **88** respectively of the arms **78** and **80** are pivotally secured to a support block **90** which is rigidly secured to a framework of the printing machine. A similar arrangement of parallel arms supports the wedge shaped seal **58** as shown in FIGS. **3** and **5**. Accordingly, the wedge shaped seals **58** and **68** are able to be accurately located between the rollers **18** and **20** in order to minimize wear while permitting a flow of air around the periphery thereof to generate the air dams **38***a* and **56***a*.

The further wedge shaped seal **68** is disposed spaced from the form and metering rollers **18** and **20** so that friction and wear between the further wedge shaped seal **68** and adjacent rollers **18** and **20** is inhibited.

FIG. **6** is a side elevational view of a typical lithographic printing machine incorporating the the air dam seal arrangement according to the present invention. As shown in FIG. **6**, the form and metering rollers **18** and **20** are positioned such that the form roller **18** is urged against the metering roller **20** to form a nip **16** therebetween. The form roller **18** includes a cover **92** which may be of rubber having a hardness of 55 Durometer. The metering roller **20** also has a cover **94** which may have a hardness of 100 Durometer. The wedge shaped space above the rollers **18** and **20** is filled with dampening solution **12** by means of a constant level filling arrangement (not shown) which is well known to those skilled in the printing art. As the rollers **18** and **20** rotate as indicated by the arrows **96** and **98** respectively, dampening solution **12** is metered by the nip **16** and is transferred from the surface **100** of the cover **92** to a lithographic printing plate **102** secured around the periphery of a plate cylinder **104**. Subsequent to the application of dampening solution **12** to the printing plate **102**, ink is applied to the dampened surface of the printing plate **102** by means of a train of inking rollers **106** which cooperate with an ink fountain **108** as is well known in the art. Consequently, due to the prior treatment of the plate **102**, certain portions of the surface will be receptive to the transfer thereto of damping solution and subsequently to the reception of ink. However, other portions of the surface of the plate **102** will be non receptive to such dampening solution **12** and will not therefore take up any dampening solution **12** or any ink. Such hydrophobic portions of the surface of the plate **102** will therefore be devoid of ink. Furthermore, the hydrophilic portions of the surface of the printing plate will be receptive first to the dampening solution and then to the printing ink. Due to the rotation of the plate cylinder **104**, as indicated by the arrow **110**, the ink image formed on the plate **102** will be transferred to the surface of a blanket **112** secured to the periphery of a blanket cylinder **114**. As the blanket cylinder rotates as indicated by the arrow **116**, the ink image on the surface of the blanket **112** is transferred to a web or sheets of paper **118** which extends through nip **120** defined between the blanket cylinder **114** and a backing roller **122**.

The air dam arrangement of the present invention as shown in FIGS. **1–6**, prevents leakage of dampening solution from the edges **32** and **52** of the reservoir **14** as shown particularly in FIG. **5**.

In operation of the device according to the present invention, when the rollers **18** and **20** are rotating, dampening solution **12** is applied to the plate **102** by the form roller **18**. However, during continued rotation of the form roller **18** in contact with the printing plate **102**, ink particles will be taken up by the form roller **18** from the plate **102**. Such ink particles will mix with the dampening solution **12**. Consequently, during prolonged usage of the printing machine, if such mixture of ink and dampening solution were to leak past the edges **32** and **52**, shown in FIG. **5**, of the reservoir **14**, such leakage could spoil the image trans-

ferred to the paper web **118**. Therefore, by the provision of the air dam seals **38** and **56** according to the present invention, such leakage is prevented and prolonged usage of the printing setup can be maintained without marring the quality of the printed product.

What is claimed is:

1. A dampener assembly, in combination with a seal apparatus for sealing dampening solution, comprising:

a rotatable form roller and a rotatable metering roller located adjacent one another and defining a nip therebetween;

a reservoir of dampening solution disposed above the nip defined between the form roller and metering roller; the form roller and metering roller each being rotatable in a direction from the reservoir towards the nip;

the seal apparatus including: a conduit having a first and a second end, said first end being connected to a source of pressurized air; and a nozzle sealingly connected to said second end of said conduit, said nozzle being located adjacent to an edge of the reservoir, the seal apparatus being structured such than in use of the dampener assembly, pressurized air flows from the source of pressurized air through said conduit to said nozzle so that said nozzle directs a flow of air towards the edge of the reservoir and between the form and metering rollers such that said flow of air generates an air dam for sealing the reservoir so that leakage of dampening solution from the edge of the reservoir is inhibited.

2. A seal apparatus as set forth in claim **1** wherein

said nozzle defines a throat which increases the velocity of said flow of air so that said flow of air reliably and predictably impedes said leakage of the dampening solution from the edge of the reservoir.

3. A seal apparatus as set forth in claim **1** wherein

said conduit includes:

a plastic tube.

4. A seal apparatus as set forth in claim **3** wherein

said plastic tube is flexible.

5. A seal apparatus as set forth in claim **1** further including:

a further conduit having a first and a second extremity, said first extremity being connected to said source of pressurized air;

a further nozzle sealingly connected to said second extremity of said further conduit, said further nozzle being located adjacent to a further edge of the reservoir, the further edge being disposed between the form and metering rollers and spaced axially along the rollers relative to the edge, the arrangement being structured such that in use of the apparatus, pressurized air also flows from the source of pressurized air through said further conduit to said further nozzle so that said further nozzle directs a further flow of air towards the further edge of the reservoir and between the form and metering rollers such that said further flow of air generates a further air dam for sealing the reservoir so that leakage of the dampening solution from the further edge of the reservoir is inhibited.

6. A seal apparatus as set forth in claim **5** further including:

a wedge shaped seal disposed between said nozzle and the edge of the reservoir for assisting in said generation of said air dam, said wedge shaped seal diverting said flow of air so that said flow of air flows towards a periphery defined by said wedge shaped seal so that leakage of the dampening solution from the reservoir past said periphery of said wedge shaped seal is prevented;

a further wedge shaped seal disposed between said further nozzle and the further edge of the reservoir for assisting in said generation of said further air dam, said further wedge shaped seal diverting said further flow of air so that said further flow of air flows towards a further periphery defined by said further wedge shaped seal so that leakage of the dampening solution from the reservoir past said further periphery of said further wedge shaped seal is prevented.

7. A seal apparatus as set forth in claim **6** wherein

said further wedge shaped seal is fabricated from a plastics material.

8. A seal apparatus as set forth in claim **6** wherein

said further wedge shaped seal is adjustably disposed relative to the further edge of the reservoir.

9. A seal apparatus as set forth in claim **6** wherein

said further wedge shaped seal is disposed spaced from the form and metering rollers so that friction and wear between said further wedge shaped seal and adjacent rollers is inhibited.

10. A seal apparatus as set forth in claim **1** further including:

a wedge shaped seal disposed between said nozzle and the edge of the reservoir for assisting in said generation of said air dam, said wedge shaped seal diverting said flow of air so that said flow of air flows towards a periphery defined by said wedge shaped seal so that leakage of the dampening solution from the reservoir past said periphery of said wedge shaped seal is prevented.

11. A seal apparatus as set forth in claim **10** wherein

said wedge shaped seal is disposed spaced from the form and metering rollers so that friction and wear between said wedge shaped seal and adjacent rollers is inhibited.

12. A seal apparatus as set forth in claim **10** wherein

said wedge shaped seal is fabricated from a plastics material.

13. A seal apparatus as set forth in claim **10** wherein

said wedge shaped seal is adjustably disposed relative to the edge of the reservoir.

14. A seal apparatus for sealing dampening solution which is disposed within a reservoir extending from a nip defined between a form roller and a metering roller of a lithographic printing machine, said apparatus comprising:

a conduit having a first and a second end, said first end being connected to a source of pressurized air;

a nozzle sealingly connected to said second end of said conduit, said nozzle being located adjacent to an edge of the reservoir, the nozzle and conduit being structured such that in use of the apparatus, pressurized air flows from the source of pressurized air through said conduit to said nozzle so that said nozzle directs a flow of air towards the edge of the reservoir and between the form and metering rollers such that said flow of air generates an air dam for sealing the reservoir so that leakage of the dampening solution from the edge of the reservoir is inhibited;

a wedge shaped seal disposed between said nozzle and the edge of the reservoir for assisting in said generation of said air dam, said wedge shaped seal diverting said flow of air so that said flow of air flows towards a periphery defined by said wedge shaped seal so that leakage of the dampening solution from the reservoir past said periphery of said wedge shaped seal is prevented; and

said wedge shaped seal is of cusp shaped configuration, said wedge shaped seal having a point and a first and a second curved surface, the wedge shaped seal being such that said point is disposed closely adjacent to the nip defined between the form and metering rollers, said first curved surface being disposed in spaced close proximity to the form roller and said second curved surface being disposed in spaced close proximity to the metering roller.

15. A seal apparatus for sealing dampening solution which is disposed within a reservoir extending from a nip defined between a form roller and a metering roller of a lithographic printing machine, said apparatus comprising:

a conduit having a first and a second end, said first end being connected to a source of pressurized air;

a nozzle sealingly connected to said second end of said conduit, said nozzle being located adjacent to an edge of the reservoir, the nozzle and conduit being structured such that in use of the apparatus, pressurized air flows from the source of pressurized air through said conduit to said nozzle so that said nozzle directs a flow of air towards the edge of the reservoir and between the form and metering rollers such that said flow of air generates an air dam for sealing the reservoir so that leakage of the dampening solution from the edge of the reservoir is inhibited;

a further conduit having a first and a second extremity, said first extremity being connected to said source of pressurized air;

a further nozzle sealingly connected to said second extremity of said further conduit, said further nozzle being located adjacent to a further edge of the reservoir, the further edge being disposed between the form and metering rollers and spaced axially along the rollers relative to the edge, the further nozzle and further conduit being structured such that in use of the apparatus, pressurized air flows from the source of pressurized air through said conduit to said nozzle so that said nozzle directs a flow of air towards the edge of the reservoir and between the form and metering rollers such that said flow of air generates an air dam for sealing the reservoir so that leakage of the dampening solution from the edge of the reservoir is inhibited and such that pressurized air also flows from the source of pressurized air through said further conduit to said further nozzle so that said further nozzle directs a further flow of air towards the further edge of the reservoir and between the form and metering rollers such that said further flow of air generates a further air dam for sealing the reservoir so that leakage of the dampening solution from the further edge of the reservoir is inhibited;

a wedge shaped seal disposed between said nozzle and the edge of the reservoir for assisting in said generation of said air dam, said wedge shaped seal diverting said flow of air so that said flow of air flows towards a periphery defined by said wedge shaped seal so that leakage of the dampening solution from the reservoir past said periphery of said wedge shaped seal is prevented;

a further wedge shaped seal disposed between said further nozzle and the further edge of the reservoir for assisting in said generation of said further air dam, said further wedge shaped seal diverting said further flow of air so that said further flow of air flows towards a further periphery defined by said further wedge shaped seal so that leakage of the dampening solution from the reservoir past said further periphery of said further wedge shaped seal is prevented; and

said further wedge shaped seal is of cusp shaped configuration, said further wedge shaped seal having a further point and a further first and a second curved surface, the further wedge shaped seal being such that said further point is disposed closely adjacent to the nip defined between the form and metering rollers, said further first curved surface being disposed in spaced close proximity to the form roller and said further second curved surface being disposed in spaced close proximity to the metering roller.

16. A dampener assembly, in combination with a seal apparatus for sealing dampening solution, comprising:

a rotatable form roller and a rotatable metering roller located adjacent one another and defining a nip therebetween;

a reservoir of dampening solution disposed above the nip defined between the form roller and metering roller; the form roller and metering roller each being rotatable in a direction from the reservoir towards the nip;

the seal apparatus including: a conduit having a first and a second end, said first end being connected to a source of pressurized air; a nozzle sealingly connected to said second end of said conduit, said nozzle being located adjacent to an edge of the reservoir, the seal apparatus being structured such than in use of the dampener assembly, pressurized air flows from the source of pressurized air through said conduit to said nozzle so that said nozzle directs a flow of air towards the edge of the reservoir and between the form and metering rollers such that said flow of air generates an air dam for sealing the reservoir so that leakage of dampening solution from the edge of the reservoir is inhibited, and a seal disposed between the nozzle and the edge of the reservoir for assisting in said generation of said air dam, said seal diverting said flow of air so that said flow of air flows towards a periphery defined by said seal so that leakage of the dampening solution from the reservoir past said periphery of said seal is prevented.

17. A dampener assembly, in combination with a seal apparatus for sealing dampening solution, comprising:

a rotatable form roller and a rotatable metering roller located adjacent one another and defining a nip therebetween;

a reservoir of dampening solution disposed above the nip defined between the form roller and metering roller; the form roller and metering roller each being rotatable in a direction from the reservoir towards the nip;

the seal apparatus including: a conduit having a first and a second end, said first end being connected to a source of pressurized air; a nozzle sealingly connected to said second end of said conduit, said nozzle being located adjacent to an edge of the reservoir, the seal apparatus being structured such than in use of the dampener assembly, pressurized air flows from the source of pressurized air through said conduit to said nozzle so that said nozzle directs a flow of air towards the edge of the reservoir and between the form and metering rollers such that said flow of air generates an air dam for sealing the reservoir so that leakage of dampening solution from the edge of the reservoir is inhibited, and a seal disposed between the nozzle and the edge of the reservoir and being adjustably disposed relative to the edge of the reservoir for assisting in said generation of said air dam, said seal diverting said flow of air so that said flow of air flows towards a periphery defined by said seal so that leakage of the dampening solution from the reservoir past said periphery of said seal is prevented.

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